Alloy X-750 is a nickel chromium alloy similar to Alloy 600 but made precipitation hardenable by additions of aluminum and titanium. It has good resistance to corrosion and oxidation along with high tensile and creep-rupture properties at temperatures to 1300°F. Its excellent relaxation resistance is useful for high temperature springs and bolts. Used in gas turbines, rocket engines, nuclear reactors, pressure vessels, tooling, and aircraft structures.

Specifications

UNS: N07750 **W. Nr./EN:** 2.4669 **ASTM:** B 637 **NACE:** MR0175 **ISO:** 15156-3

Chemical Composition, %

	Ni	Cr	Mn	Cu	Si	C	S	Co	Cb	Ti	Al	Fe
MIN	70.0	14.0	–	–	–	–	–	–	0.7	2.25	0.4	5.0
MAX	–	17.0	1.0	0.5	0.5	0.08	0.01	1.0	1.2	2.75	1.0	9.0

Features

- Good mechanical properties at high temperatures
- Good formability
- Good oxidation resistance

Applications

- Oil and gas production
- Gas turbine engines
- Nuclear engineering

Physical Properties

Density: 0.299 lb/in^3 **Melting Range:** 2540 - 2600°F **Poisson's Ratio:** 0.3 **Electrical Resistivity:** 731 Ohm-circ mil/ft

Temperature, °F	68	392	752	800	1000	1112
Coefficient of Thermal Expansion* in/in°F x 10^{-6}	–	7.1	7.7	9.2	10.1	8.3
Thermal Conductivity Btu • ft/ft^2 • hr • °F	6.8	–	–	–	–	–
Modulus of Elasticity Dynamic, psi x 10^6	32.1	30.5	28.6	23.9	20.3	26.2

** 70°F to indicated temperature.*

Mechanical Properties

Minimum Specified Properties, ASTM A 240

Ultimate Tensile Strength, ksi	120
0.2% Yield Strength, ksi	60
Elongation, %	30
Hardness MAX, Brinell	–

Typical Tensile & Impact Properties, Bar
¾ equalized and precipitation treated hot-rolled, 1625°F 24 hours, AC + 1300°F for 20 hours, AC

Temperature, °F	600	800	1000	1100	1200	1350	1500
Ultimate Tensile Strength, ksi	169.0	166.0	163.5	159.0	143.0	107.0	65.4
0.2% Yield Strength, ksi	116.5	114.0	115.0	112.0	110.0	98.3	64.7

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CLAUDIO CZARNOBAI
COMMERCIAL MANAGER
ClaudioCzarnobai@intwinds.com
F +55 11 3825 2966
C +55 11 99112 2703

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